Remarks/Arguments

Claims 1-18 are pending and are rejected.

Claims 1, 2, 6, 7, 12, 17, and 18 are amended. Claim 10 is cancelled and its feature is incorporated into claim 6. Claim 17 is amended to directly depend from claim 15.

Three paragraphs -- one beginning on page 3, line 10, another beginning on page 4, line 18, and the other beginning on page 5, line 3 -- are amended. FIGs. 3 and 4 are amended. Formal drawings are submitted with changes to FIGs. 3 and 4.

Specifications

Responsive to the objection to claims 5, 10, 14, 16, and 17 that the clause "the pin serves as a bi-directional conduit for signals" lacks antecedent basis in the specification, applicant respectfully submits that the clause is properly supported by the specification although the specification does not recite the term "bi-directional conduit." Pin 51 of the IC shown in FIG. 1 is an example of the pin. The specification, at page 2, line 31-page 3, line 1, states the following: " . . . pin 51 is the de-emphasis pin with a 2200pF capacitor 20 coupled to ground which, in combination with an internal 34 Kohm resistor 34 (see fig. 2), provides the 75 usec de-emphasis characteristic required to equalize the pre-emphasis provided at the FM transmitter to the FM signal for improving signal to noise ratio." Thus, pin 51 must serve as an output pin in order for audio signals from an amplifier 14 to reach the capacitor 20 for performing the de-emphasis function and as an input pin for signals to come back from the capacitor 20. Support for pin 51 serving as input to the integrated circuit can also be found, for example, at page 3, lines 14-15 where the specification states that signals from pin 51 are coupled to

transistor 36 and on to audio attenuator 22, and at page 3, lines 20-22 where the specification states that pin 51 is an injection point for the external audio signal.

Thus, it is clear that pin 51 serves as a "bi-directional conduit," although the specification does not recite that term word by word. It is well established that the invention claimed needs not be described *ipsis verbis* in order to satisfy the disclosure requirement of U.S.C. §112. See Ex parte Holt, 19 USPQ 2d 1211, 1213 (B.P.A.I. 1991). However, in the interest of advancing the prosecution, applicant has amended paragraph 18 to recite that pin 51 in effect serves as a bi-directional conduit.

Responsive to the objection to claim 17, which recites the clause "the pin serving as a bi-directional conduit," applicant submits that the objection has been addressed for the reason discussed above.

Responsive to the objection to claim 18 that the term "high impedance" lacks antecedent basis in the specification, applicant submits that the specification properly support this term. However, in the interest of advancing the prosecution, applicant has amended claim 18 to delete the term "high impedance," and to more particularly point out and distinctly claim the subject matter that applicant regards as the invention. In particular, in the second element, amended claim 18 recites that in a signaling coupling mode, the first emitter/source electrode is at a first impedance with respect to the reference point, and in the fourth element, amended claim 18 recites that the first emitter/source electrode is switched to be at a second impedance higher than the first impedance with respect to the reference point thus removing impedance loading by the first emitter/source electrode. Support for the amendment can be found, for example, at page 3, lines 24-27, page 4, lines 8-17, and page 4 line 25-page 5, line 2. The capacitor 20 has higher impedance than the resistor 46. Thus, when the transistor 42

is in a saturated state, the emitter/source electrode of the transistor 40 is at the resultant impedance (the first impedance) of the network of the resistor 46 in parallel with the capacitor 44 and the capacitor 20. See FIGs. 3 and 4. On the other hand, when the transistor 42 is in a cutoff state, the emitter/source electrode of the transistor 40 is at the resultant impedance (the second impedance) of the network of the capacitor 44 in series with the capacitor 20 because the resistor 46 is no longer connected to ground. Thus, the second impedance is higher than the first impedance.

Although the specification does not exactly recite the terms "first impedance" and "second impedance", as discussed above, invention claimed needs not be described *ipsis verbis* in order to satisfy the disclosure requirement of U.S.C. §112.

Applicant also takes the opportunity to correct the misspelling of the word "affect" on page 4 and replace "70" with "58" on page 5.

Drawings

Responsive to the objection that no pin 56 is shown in FIG. 3, applicant has amended FIGs. 3 and 4 to refer to the transistor having its base/gate connected to a resistor 60 as the transistor 59 and amend the corresponding description by replacing the reference numeral 56 with the reference numeral 59 at paragraph 0022.

Claim Rejection - 35 U.S.C. §112

Responsive to rejection to claim 18, applicant has amended claim 18 as described above in the response to the objection to the specification.

Claim Objections

Responsive to the objection to claims 2, 7, and 12, applicant has replaced the term "signal processor" in the preambles with "signal processing system," as suggested by the Examiner.

Claim Rejection - 35 U.S.C. §102(b)

Responsive to the rejection of claims 1, 2, 4-7, and 9-17 under 35 U.S.C. §102(b) as being anticipated by US 5, 557, 236 ("Monti"), applicant has amended independent claims 1 and 6 to more particularly point out and distinctly claim the subject matter that applicant regards as the invention, and respectfully submits that Monti does not anticipate amended claims 1 and 6 and their respective dependent claims, independent claim 11 and its dependent claims, and independent claim 17 for reasons discussed below.

Amended independent claim 1, for example, recites a signal processing system comprising:

means for providing a first signal intrinsic to an integrated circuit;

means for providing a first operational function to the first signal, said function being provided at a pin of the integrated circuit,

means for providing a second operational function to the first signal by the integrated circuit to produce a third signal representative of the first signal at the output of the second operational function providing means, and

means for coupling a second signal extrinsic of the integrated circuit to the pin of the integrated circuit so that the means for providing the second operational function operates on the second signal to produce a fourth signal representative of the second signal at the output of the second operational function providing means. (Emphasis added.)

Support for the underlined features can be found, for example, at page 3, lines 12-15 and 24-27, where the attenuator 22 exemplifies the second operational function providing means as recited in amended claim 1. Thus, the second operational function

providing means operate on both the first signal intrinsic to the integrated circuit and the second signal extrinsic to the integrated circuit to produce signals representative of the first and second signals, respectively, at the same output of the second operational function providing means..

By contrast, Monti discloses an integrated circuit having a bidirectional pin 2 as shown in FIGs. 2-4. Pin 2 serves an output terminal for outputting digital signals from a first circuit portion 3 marked AMS (Automatic Music Sensor) via an inverter 4, and as an input terminal for inputting a mute signal to a second circuit portion 24 marked MUTE. See col. 2, lines 29-36 and FIG. 2. The mute signal is a signal generated when a switch 5 is closed. See col. 2, lines 47-51. The integrated circuit also includes a circuit 10 to detect the logic state of pin 2 and to locate its operative functions as digital input or digital output. See col. 2, lines 53-55. The circuit 10 includes an actuator block 6, which picks up the voltage signal at pin 2, the output of which is connected to an input of a comparator 7, which provides the mute control signal to MUTE 24, indicating whether the switch 5 is closed or open. See FIGs. 3 and 4, and col. 2, line 52-col. 3, line 4. The state of the switch 5 may affect output of the detector 10 by varying the voltage developed at pin 9 of the comparator 7, so that the comparator 7 produces a signal representing the state of the switch 5. See the four different operational conditions of the integrated circuit described at col. 3, line 61-col. 4, line 42. Nowhere does Monti disclose or suggest a second operational function providing means as recited in amended claim 1.

The Office Action, however, interprets the comparator 7 as the first operational function providing means, and relies upon the description at col. 3, lines 42-50 as disclosing the second operational function providing means. However, the description

at col. 3, lines 42-50 actually describes the effect of the external resistor R_{ext} when the switch 5 is closed. It appears that the external resistor R_{ext} has been interpreted as the second operational function providing means. However, the external resistor R_{ext} should not be interpreted as the second operational function providing means because the external resistor R_{ext} is not part of the integrated circuit, as recited in amended claim 1.

On the other hand, the Office Action may interpret the actuator block 6 in the detector 10 as the second operational function providing means. However, as described at col. 3, lines 42-50 and col. 3, line 58-col. 4 line 42, the signal present at the output of the actuator block 6, which is connected to pin 9 of the comparator 7, is representative of the second signal (the state of the switch 5) but is not representative of the first signal (the signal from the inverter 4 relied upon by the Office Action as the first signal providing means). Thus, the actuator block 6 should not be interpreted as the second operational function providing means recited in amended claim 1.

In light of the fact that Monti does not disclose or suggest the second operational function providing means as recited in amended claim 1, amended claim 1, and dependent claims 2-5, are patentable over Monti.

Furthermore, claim 2 recites that the first and second signals are analog audio signals. Although the integrated circuit disclosed in Monti may be an audio device and pin 2 may receive and transmit digital and/or analog signal, the mute signal (relied upon as the second signal) generated by closing the switch 5 is a control signal, not analog audio signals as recited in amended claim 1. See, for example, col. 2, lines 33-36. Monti also does not disclose or suggest that the signal from the inverter 4 is an analog audio signal. Thus, claim 2 is patentable for this reason alone.

The Office Action, however, relies upon the description at col. 2, lines 33-36 as disclosing the signal from the inverter 4 as an analog audio signal. This is a total misunderstanding of the signal from the inverter 4 because according to the four operational conditions described at col. 3, line 58-col. 4, line 42, the state of the switch 5 does not affect the state of the signal coming from the inverter 4, although the state of the switch 5 may affect the magnitude of the voltage developed at pin 9 of the comparator 7. Thus, the signal from the inverter 4 is not affected by the mute signal and is not the analog audio signal as alleged.

It is also self-evident from examining FIG. 2 that the signal from the inverter 4 is not an analog signal, let along analog audio signal, because it clearly shows that the output from the AMS 3, which is fed to the inverter 4, is a digital output. This is not a surprise because AMS 3 is an automatic music sensor as described at col. 2, lines 29-31, which should produce a signal indicating the presence or absence of music.

Furthermore, claim 4 recites that when the second signal is switched "in" the first signal is switched "off." By contrast, Monti discloses that closing the switch 5 (relied upon as switching in the second signal) does not affect the state of the signal (relied upon as the first signal) from the inverter 4. See the four different operational conditions of the integrated circuit described at col. 3, line 61-col. 4, line 42. Thus, the first signal is not switched "off" when the second signal is switched "in" and claim 4 is patentable over Monti for this reason alone.

The Office Action relies on the description at col. 2, lines 33-36 as disclosing the feature of switching in the second signal causing the first signal to be switched off. As discussed above with respect to claim 2, this is a total misunderstanding of the signal from the inverter 4 because according to the four operational conditions described at

col. 3, line 58-col. 4, line 42, the state of the state of the switch 5 does not affect the state of the signal coming from the inverter 4, although the state of the switch 5 may affect the magnitude of the voltage developed at pin 9 of the comparator 7. Thus, the signal from the inverter 4 is not affected by the mute signal and is not the analog audio signal that can be muted by a mute signal from pin 2 as alleged.

Claim 6 is amended to recite the feature that when the second signal is switched "in", the first signal is disabled at the pin. Thus, amended claim 6, and dependent claims 7, 8, and 10, are patentable over Monti for similar reasons discussed above with respect to claim 4.

Independent claims 11 and 15 also recite the feature of coupling of the second signal to the pin switching "off" the presence of the first signal at the pin. For similar reasons discussed above with respect to claim 4, claims 11 and 15, and respective dependent claims 12-14, 16, and 17, are patentable over Monti.

Furthermore, claims 12 and 13 respectively recites similar features recited in claims 2 and 3. As such, claims 12 and 13 are patentable over Monti for respective similar reasons discussed above with respect to claims 2 and 3.

Claim Rejection - 35 U.S.C. §103(a)

Responsive to the rejection of claims 3 and 8 under 35 U.S.C. §103(a) as being unpatentable over Monti in view of US 5,045,733 ("Sendelweck"), applicant submits that they are patentable over the two references for their respective dependence from claims 1 and 6, because Sendelweck fails to cure the defects as applied to claims 1 and 6.

As pointed out in the Office Action, Sendelweck discloses a switching apparatus that can enhance the switch-off attenuation. Thus, the switching apparatus may be

used to replace the switch 5 in Monti. However, the resulting system still does not include the second operational function providing means operating on both the first signal intrinsic to the integrated circuit and the second signal extrinsic to the integrated circuit to produce signals representative of the first and second signals, respectively, at the same output of the second operational function providing means, as recited in amended claim 1. The resulting system also does not include the feature that when the second signal is switched "in", the first signal is disabled at the pin, as recited in amended claim 6.

Conclusion

Having fully addressed the Examiner's objections and rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6813, so that a mutually convenient date and time for a telephonic interview may be scheduled.

Fee

No fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 07-0832.

Respectfully submitted,

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September 6, 2005

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to [Mail Stop Amendment], Commissioner for Patents, Alexandria, Virginia 22313-1450 on:

9-7-05 Karen Schlauch

Date

Amendments to the Drawings

The attached sheets of drawings include changes to Figs. 3 and 4.

Attachment: Replacement Sheets 1-2